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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,217	03/19/2001	Susumu Saito	Q63511	6911

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EXAMINER

PHAM, HAI CHI

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 12/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/810,217

Applicant(s)

SAITO ET AL.

Examiner

Hai C Pham

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspond nce addr ss --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 7-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

FINAL REJECTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 9 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

- Claim 9 recites the following limitation "wherein said controller detects the positions of the output beams with photodetectors that are irradiated by light from a polarizing prism which is disposed between said laser light source and said beam scanner" (emphasis added), which is not supported by the disclosure. Claim 9 is directed to one of the embodiments in which a [single] semiconductor laser light source (1) including a plurality of light emitting devices is used, as shown in Fig. 8, and in which the controller (38) controls the rotation of the laser light source based on the [beam-position] detection signal (60) outputted from the [single] photodetector (16) arranged in the same plane as the scanning surface (17) (see Specification, page 21, lines 7-9). The specification never mentions the use of the claimed polarizing prism for directing the laser light beams toward the photodetectors.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claim 7 recites the following limitation "a controller for specifying respectively one of the light beams from each of said semiconductor laser light sources" (emphasis added), which appears to be confused in that the function of "specifying" by the controller is not clearly understood. On the other hand, it is unclear whether "a controller" recited in claim 7 is the same as the "controller" recited in the base claim 1, since they appear to perform the same function by keeping the interval between scanning positions to a predetermined value.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by Kitamura (U.S. 4,393,387).

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Kitamura discloses a beam recording apparatus performing parallel scanning with a plurality of beams on an image recording medium, the apparatus comprising a semiconductor laser source (1, Fig. 1) including a plurality of light emitting devices (a, b, c, Fig. 2) arranged in a line at equal intervals (A), a beam scanner (polygon mirror 3), a beam converging unit (condensing optical system 2) disposed between the laser light source and the beam scanner, a controller (control circuit CONT) for always controlling an inclination angle of said plurality of light emitting devices with respect to a beam scanning direction of said semiconductor laser light source, where the inclination angle (θ) satisfies the equation:

$$\theta = \sin^{-1}[P/MA]$$

wherein A is the interval between adjacent ones of the light emitting devices, P is the scanning pitch or interval between adjacent ones of the light beams on the scanning surface, and M is the magnification of the entire optical system (col. 3, lines 38-50).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. (U.S. 5,999,345) in view of Kitamura.

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Nakajima et al. discloses a multi-beam optical scanning apparatus comprising two semiconductor laser light sources (LD1, LD2, Fig. 6) each including a plurality of light emitting devices arranged in a line at equal intervals, a beam scanner (rotating polygon mirror 403), a beam converging unit (cylinder lens 402), and a controller for always controlling an inclination angle (θ_1 , θ_2) of said plurality of light emitting devices (LD1-R, LD1-L, LD2-R, LD2-L) with respect to a beam scanning direction of each of said semiconductor laser light sources (Fig. 7).

However, Nakajima et al. does not explicitly disclose the equation governing the inclination angle.

Regardless, the relationship between the inclination angle of the semiconductor laser light source, the magnification of the entire optical system of the scanning apparatus and the interval of the laser beam spots on the scanning surface is well known in the printing art as evidenced by Kitamura (see discussion in paragraph 6 of the present Office action. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to control the inclination angle of the semiconductor laser source based on the equation as taught by Kitamura in the device of Nakajima et al. since such adjustment is an old and well known practice in the printing art.

With regard to claims 3 and 4, Nakajima et al. further teaches the controller for always detecting a position of the output beams in a direction perpendicular to the main scanning direction (via the synchronization detecting sensor 409) (col. 12, lines 43-48), as well as for controlling a predetermined pitch interval (P) of scanning lines owing to

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variation in relative position of each of said light sources (via pitch calculation section 412), and for controlling an inclination angle (θ_1 , θ_2) of arrangement of said plurality of light emitting devices with respect to the beam scanning direction (main scanning direction) of each of said semiconductor laser light sources, respectively (col. 9, lines 25-31).

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. in view of Kitamura, as applied to claim 1 above, and further in view of Motoi (U.S. 5,539,719).

Nakajima et al., as modified by Kitamura, discloses all the basic limitations of the claimed invention except for the detector detecting a shift in time interval between moments at which the laser light beams pass over the detector.

Nevertheless, Motoi discloses an image forming apparatus including a light beam deviation detecting device (sensors B, C, Fig. 18) between the two laser light beams in the sub-scanning direction by detecting the time interval difference (T3) between the respective detecting time of arrivals (T1 and T2) of the two laser light beams.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Nakajima et al., as modified by Kitamura, with the aforementioned teaching of Motoi for the purpose of calculating and subsequently correcting the pitch interval of the scanning lines.

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10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. in view of Arimoto et al. (U.S. 4,806,951).

Nakajima et al. discloses all the basic limitations of the claimed invention except for the use of the polarizing prism for directing the light beams toward the photodetectors.

However, Arimoto et al. discloses an optical printer having a plurality of laser light sources (11 and 12) emitting respective light beams, a portion of each of which is directed toward the beam-position detecting sensors (A1-A4) via the polarizing prism (10) such that the spacing of the scanning lines on the surface to be scanned is kept at a predetermined value (col. 7, lines 9-40).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the photodetectors and the polarizing prism as taught by Arimoto et al. in the device of Nakajima et al. such that the interval between the scanning lines is accurately adjusted to a desired value.

Response to Arguments

11. Applicant's arguments with respect to claims 1-4, 7-9 have been considered, and are traversed in view of the new grounds of rejection as stated above in the present Office action.

Conclusion

12. Applicants' amendment, which changes the scope of the base claims, necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sato et al. (JP 10-142539) discloses a scanning optical device having a light source including a plurality of light emitting points, whose inclination angle θ in the sub-scanning direction is controlled to conform with the equation related to interval P between the light beams on the surface to be scanned, the interval L between the light emitting points, and the image forming magnification β_F .

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Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



**HAI PHAM
PRIMARY EXAMINER**

December 4, 2002